

IN THE DRAWINGS:

Applicants are submitting herewith formal drawings for this application.

REMARKS

In the Office Action, Claims 7-9 were allowed. The other pending Claims 1-6 and 10-19 were rejected over the prior art, principally an IEEE Paper “A Systemic Approach to SER Estimation and Solutions” (Nguyen, et al.). In particular, Claims 1, 3-6, 10, 12-14 and 16-19 were rejected under 35 U.S.C. 102 as being fully anticipated by Nguyen, et al; and Claims 2, 11 and 15 were rejected under 35 U.S.C. 103 as being unpatentable over Nguyen, et al. in view of a second IEEE paper “Analyzing soft errors in leakage optimized SRAM design” (Degalahal, et al.). The Examiner also objected to the drawings, and specifically to Figure 4, and raised minor objections to the language of several of the claims, including Claims 1-9, 11-13 and 15-19.

Applicants herein ask that independent Claims 1, 10 and 14 be amended to better define the subject matters of these claims. Claims 2 and 5 are being amended to keep the language of these claims consistent with the language of amended Claim 1. Similarly, Claim 11 is being amended to keep the language of this claim consistent with the language of Claim 10; and Claims 15 and 17 are being amended to keep the language of these claims consistent with the language of Claim 14.

Claim 19, which is dependent from Claim 1, is being amended to better describe the subject matter of Claim 19. Claims 4, 13 and 16 are being cancelled to reduce the number of pending issues, and Claims 5, 17 and 18 are being amended to maintain the appropriate dependency among the claims. Several changes are also being made to Claims 1, 7 and 9 to address the Examiner’s objections to the language used in these claims.

Applicants are submitting herewith formal drawings for this application. These drawings comply with the requirements of 37 C.F.R. 1.84, and overcome the informalities in the original informal drawings and noted in the Draftperson's Drawing Review.

With respect to the Examiner's minor objections to the claim language, the Examiner asked that the beginning of the preambles of the dependent claims be changed from "A method, system, or program, to "The" method, system or program. Applicants respectfully traversed. The use of "A" to introduce the claims emphasizes the fact that there are numerous specific methods, systems or programs that fall within the scope of the claims. The word "A," as used in the above-described manner, is clear, definite, and readily understood.

The claims are otherwise being amended as the Examiner suggested in the Office Action. For example, in Claims 1, 7 and 9, line 3, "the circuit" is being changed to "each of circuits," and in Claims 1, 7 and 9, line 5, "each of" is being added before "the circuits." In Claim 9, line 1, Applicants are deleting "according to Claim 6."

In light of the foregoing comments and changes, the Examiner is respectfully asked to reconsider and to withdraw the objections to the drawings and to the language of the claims.

With respect to the rejections of the claims over the prior art, Applicants respectfully submit that Claims 1-3, 5, 6, 10-12, 14, 15, 17, 18 and 19 patentably distinguish over the prior art because the references do not disclose or suggest the circuit design procedure described in independent Claims 1, 10 and 14.

More specifically, the present invention provides a procedure for reducing the failure rates of nets of an integrated circuit due to soft errors without impacting the timing on critical paths of the circuit. To do this, the present invention performs a timing analysis and a soft error analysis of those nets. Those nets that are not timing critical but that fail the soft error analysis are improved to reduce their risk to soft errors. Then, these nets are retested to determine if they still are not timing critical.

Nguyen, et al. describes a procedure for estimating a soft error rate. The paper finds that latches/flip-flops and combinational logic contribute significantly to the overall chip failure in time rate.

Degalahal, et al. discloses a method and system for analyzing soft errors in a SRAM design. The paper contends that there is a trade off between optimizing the leakage power and improving the immunity to soft errors.

Thus, Nguyen, et al and Degalahal, et al describe procedures for estimation of soft error rate (SER). The present invention is directed more to redesigning circuits after a soft error analysis has found a net that is not timing critical does have a soft error risk.

Applicants herein ask that Independent Claims 1, 10 and 14 be amended to emphasize differences between the claims and the prior art. In particular, the preambles of these claims are being amended to indicate that the claims are directed to improving the design of integrated circuits. Claims 1 and 14 are being amended to set forth the steps to determine which nets are both not timing critical and that have a risk of soft error, and to describe the design step that is taken to reduce the risk of soft errors. Claim 10, which is directed to a system for simulating an integrated circuit, describes analogous apparatus features.

The other references of record have been reviewed, and these other references, whether they are considered individually or in combination, also do not disclose or suggest the above-described design procedure of the present invention.

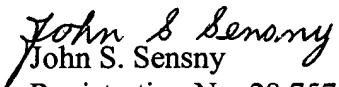
In view of the above-described differences between Claims 1, 10 and 14, and because of the advantages associated with those differences, these claims patentably distinguish over the prior art and are allowable. Claims 2, 3, 5, 6 and 19 are dependent from Claim 1 and are allowable therewith. Likewise, Claims 11 and 12 are dependent from, and are allowable with, Claim 10; and Claims 15 and 17-18 are dependent from Claim 14 and are allowable therewith.

The amendments requested herein primarily improve the form of the claims. In particular, the preambles of the independent claims are being changed to more clearly describe the specific subject matter to which the claims are directed. Also, various steps or features, consistent with the claim's amended preambles, are being added to better describe the subject matters of the claims. Applicants thus submit that it is appropriate to enter this Amendment, and such entry is respectfully requested.

For the reasons discussed above, the Examiner is respectfully requested to enter this Amendment, to reconsider and to withdraw the objections to the drawings, and the language of the claims. The Examiner is further asked to reconsider and to withdraw the rejections of Claims 1, 3, 5, 6, 10, 12, 14 and 16-19 under 35 U.S.C. 102, and the rejection of Claims 2, 11 and 15 under 35 U.S.C. 103 and to allow Claims 1-3, 5, 6, 10-12, 14, 15 and 17-

19. If the Examiner believes that a telephone conference with Applicants' Attorneys would be advantageous to the disposition of this case, the Examiner is requested to telephone the undersigned.

Respectfully submitted,


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Enclosures: Formal Drawings (Replacement Sheets for Figures 1-5)